APRIL 1992 ISSUE # 38

VZ 200/300

HUNTER VALLEY VZ JOURNAL

FASTDISK & PARK
ASSEMBLY LANGUAGE
KEYBOARD SCANNER
BASE CONVERTER
GAME REVIEWS

PRODUCED BI-MONTHLY BY H.V.VZ.U.G.
A NON PROFIT ORGANIZATION

HELP – SELL & TELL — PAGES 3 & 18

NOTES ON PRINTER RIBBON RENEWAL, 30 WAY EDGE CONNECTORS, RAMDISK UPDATE, HELP NEEDED ON ANTIMAGNETIC SHIELDING, 2 DIGIT HEX DISPLAY, ASSEMBLER ROUTINES, ETC.

RUSSELL HARRISON *FASTDISK* PUBLIC DOMAIN — PAGES 4–6

THIS WAS A COMMUNITY EFFORT, AS RUSSELL DIDN'T HAVE THE SOURCE CODE FOR IT, COLIN DISASSEMBLED AND RE-ENTERED IT, JASON REDUCED IT FROM 306 TO 153 LINES AND I TIDIED UP THE DISPLAY. I ALREADY HAVE DESIGNED THE NEW MENU FOR FASTDISK V1.2 AND PROVIDED A QUIT FUNCTION. CHANGES IN NEXT ISSUE. STILL NEEDED ARE A DIRA & STATUS FUNCTIONS AS SHOWN ON LAST SCREEN DUMP ON PAGE 6. ALSO NEEDED ARE TRACK & SECTOR NUMBER DISPLAY AS DISK IS BEING INITIALISED OR VERIFYED.

DAVE MITCHELL PARK — PAGE 7

THIS DISK ROUTINE WAS PUBLISHED PREVIOUSLY AND HAS BEEN REPRINTED AGAIN AS SOME CHANGES HAVE BEEN MADE TO IT AND A PLEA TO SOFTWARE WRITERS TO INCORPORATE IT IN THEIR PROGRAMS, OR AT THE VERY LEAST BRUN"PARK" WHEN QUITTING THEIR PROGRAM/S.

ASSEMBLY LANGUAGE BY BOB KITCH — PAGES 8–10

PART 1 OF BOB'S ASSEMBLY TUTORIAL FOR THOSE OF US WHO WOULD LIKE TO LEARN ABOUT ASSEMBLY BUT ARE AFRAID AS THEY THINK IT'S TOO COMPLEX FOR THEM. I WAS APPREHENSIVE MYSELF TILL ABOUT 2 WEEKS AGO AND NOW I CAN'T GET ENOUGH OF IT. IF I CAN START LEARNING AT 56 SO CAN YOU.

THUNDERSTORMS & PRINTERS — PAGE 10

I WAS UNFORTUNATE IN THAT MY PRINTER WAS INDERECTLY ZAPPED IN A THUNDERSTORM. I WAS LUCKY AS IT ONLY COST ME ABOUT 50 CENTS TO FIX IT AND SOME VERY ANXIOUS MOMENTS.

KSCAN PT I BY LESLIE MILBURN — PAGES 11–14

MOST VZ USERS WOULD LIKE TO HOOK UP A PROPER KEYBOARD TO THE VZ. THIS HAS BEEN DONE YEARS AGO BUT WHAT IS NEW IS THAT LES HAS WRITTEN A NEW KEYBOARD SCANNING ROUTINE WHICH WOULD GIVE EXTRA FUNCTION KEYS AND A RE-DEFINABLE KEYBOARD.

BASE NUMBER CONVERTER — PAGES 15–16

THIS PROGRAM HAS BEEN UPDATED BY ADDING NEGATIVE DECIMAL CONVERSION AND YOU NO LONGER HAVE TO ANSWER LPRINT Y/N EACH TIME A CONVERSION IS DONE AS IT HAS BEEN MADE A MENU OPTION AND ACTIVATED WHEN NEEDED ONLY.

GAME REVIEWS BY JASON OAKLEY — PAGE 17

AFTER A VERY LONG ABSENCE WE HAVE BRIEF REVIEWS ON MAGNUM QUEST AND KNIGHTS QUEST ADVENTURES. THANKS JASON.

DAVE MITCHELL SOFTWARE FOR SALE PATCH3.3 – EXT DOS & MENU/FILE COPIER — PAGE 19

PETER HICKMAN SOFTWARE FOR SALE VZ MODEM & M/C DISASSEMLER — PAGE 19

USER GROUPS ** NEWS ** SUBSCRIPTIONS — PAGE 20

APOLOGIES:

MY APOLOGIES FOR THE LATENESS OF THIS ISSUE. IT WAS UNAVOIDABLE. I TOOK A BREAK OVER CHRISTMAS/NEW YEAR PERIOD. THEN I MADE THE MISTAKE SEVERAL TIMES OF TRYING TO DO A BIT OF WORK WHICH PUT TOO MUCH STRESS ON MY SPINE WHICH WAS DAMAGED IN CAR ACCIDENT.

IT PUT ME OUT OF ACTION FOR WEEKS EACH TIME. I LIVED ONE DAY AT A TIME AND TRIED TO GET THROUGH IT WITH AS LITTLE PAIN AS POSSIBLE. IN FUTURE I MUST KEEP REMINDING MYSELF THAT I'M NO LONGER SUPERMAN AND THAT KRYPTONITE (WORK) CAN AN WILL HARM ME.

LAST MEETING:

A COUPLE NEW MEMBERS CAME ALONG TO OUR LAST MEETING IN MARCH AND IT WAS STANDING ROOM ONLY. SEEING AS IT WAS IN MY BEDROOM IT WAS UNDERSTANABLE. IT WAS THE BEST ATTENDED MEETING FOR SOME TIME.

DISKMAG - PUBLIC DOMAIN:

AFTER PRODUCING 4 ISSUES OF DISKMAG JASON OAKLEY HAS CEASED PRODUCTION OF IT AND HAS DECLARED IT PUBLIC DOMAIN. HE MOVED TO NEWCASTLE AREA FROM TAREE TO ENHANCE HIS JOB PROSPECTS AND SEEK FURTHER EDUCATION. HIS TALENTS WONT BE LOST TO VZ USERS AS YOU CAN ATTEST FROM THE FASTDIK PROGRAM IN THIS ISSUE WHICH HE REDUCED FROM 306 TO 153 LINES.

HELP - ANTIMAGNETIC SHIELDING:

I RECENTLY BOUGHT A STEREO VCR WHICH IS IN MY BEDROOM NEXT TO THE VZ. BECAUSE OF SPACE LIMITATIONS I MOUNTED A SPEAKER EITHER SIDE OF THE TV SET TO GET THE STEREO EFFECT. I NOTICED A DARK SHADOW ON THE SCREEN WHICH CAN IN TIME DAMAGE THE TV SCREEN BY DISTORTING THE IMAGE PERMAMENTALLY.

MOVING THE SPEAKERS AWAY FROM THE TV ELIMINATED THE SHADOW. I WOULD APPRECIATE IF SOMEONE CAN TELL ME HOW TO MAGNETICALLY SHIELD SPEAKERS SO THEY HAVE NO EFFECT ON THE TV. I REALISE MAGNETICALLY SHIELDED SPEAKERS ARE AVAILABLE COMMERCIALLY BUT THEY ARE EXPENSIVE.

RENEWING PRINTER RIBBONS:

IF YOU LIVE IN THE NEWCASTLE AREA OR PURCHASE YOUR FABRIC PRINTER RIBBONS BY MAIL THEN A LOCAL COMPANY MAY BE ABLE TO HELP YOU. THEY PULL OUT YOUR OLD RIBBON AND REPLACE IT WITH A BRAND NEW RIBBON AND YOU KNOW IT'S FRESH AND IT HASN'T BEEN SITTING ON THE SHELF FOR MONTHS. CONTACT INFORMATION BELOW. COST ABOUT HALF PRICE, EG:

STAR NX1000 BLACK RIBBON - $11.00-$13.00.
REPLACEMENT RIBBON - $5.75 PLUS POST & PACKING.

RIBBON RENEWAL 18 TUMUT STREET DUDLEY NSW 2290 (049) 497-644

30 WAY EDGE CONNECTORS:

I HAVE 20 FOR SALE AT $2.50 EACH WHICH INCLUDES POSTAGE. A LIMIT OF 2 PER CUSTOMER, FIRST COME FIRST SERVED. THESE EDGE CONNECTORS ARE AS USED BY THE VZ USER PORT TO CONNECT THE JOYSTICK AND PRINTER INTERFACES. THEY ALL HAVE LONG STRAIGHT WIRE WRAP PINS AND YOU WOULD HAVE TO BEND THEM 90 DEGREES FOR USE WITH THE VZ 200/300 COMPUTERS.

CONTINUED PAGE 18 . . .

RUSSELL HARRISON *FASTDISK* 38/4

PUBLIC DOMAIN

THIS PROGRAM ALLOWS A 25% IMPROVEMENT IN DISK SPEED. IT ACHIEVES THIS BY INITIALISING A DISK IN A DIFFERENT WAY (SEE BELOW), AND THIS MEANS THE EXTRA SPEED IS POSSIBLE WITHOUT FIRST LOADING A SPECIAL PROGRAM, AND IS AVAILABLE FROM ANY SOFTWARE, NOT JUST BASIC.

WHEN THE PROGRAM IS LOADED, IT WILL DISPLAY A WARNING MESSAGE, THEN WAIT FOR YOU TO INSERT THE DISK IN ONE OF TWO DRIVES WHICH YOU SELECT BY TYPING 1 OR 2. DRIVE 1 IS THE DEFAULT DRIVE. WHEN YOU ARE READY FOR DISK TO BE INITIALISED, JUST HIT RETURN TO START.

AS WITH INIT, THE PROGRAM WILL TAKE ABOUT 90 SECONDS AND WILL DESTROY THE PREVIOUS CONTENT OF THE DISK (IF ANY). WHEN IT HAS FINISHED, THE "INSERT DISK, HIT <RETURN>" MESSAGE WILL RE-APPEAR. IF YOU WANT, ANOTHER DISK CAN BE INITIALISED, BUT OTHERWISE TYPING <BREAK> WILL RETURN YOU TO BASIC.

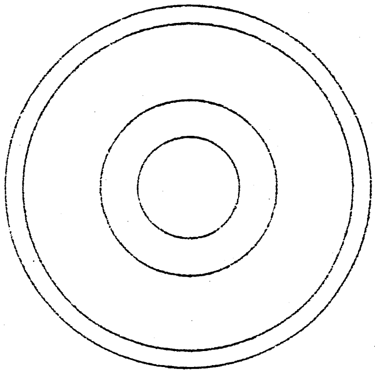
HOW IT WORKS:

ON EACH TRACK OF A DISK, DOS'S INIT COMMAND WILL ARRANGE THE SECTORS IN THIS ORDER:

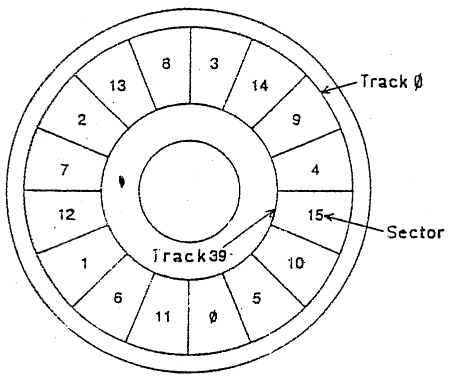
00, 11, 06, 01, 12, 07, 02, 13, 08, 03, 14, 09, 04, 15, 10, 05 - DEC
00, 0B, 06, 01, 0C, 07, 02, 0D, 08, 03, 0E, 09, 04, 0F, 0A, 05 - HEX

THERE IS A GAP OF TWO SECTORS BETWEEN ANY TWO (NUMERICALLY) CONSECUTIVE SECTORS. SOME INTERLEAVING IS NECESSARY, TO GIVE TIME FOR EACH SECTOR TO BE PROCESSED, BUT TWO SECTORS IS MUCH LONGER THAN NECESSARY. FASTDISK INITIALISES THE DISK WITH ONLY ONE EXTRA SECTOR BETWEEN TWO CONSECUTIVE ONES, USING THIS ARRANGEMENT:

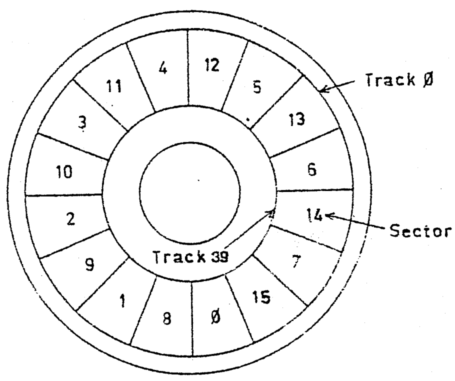
00, 08, 01, 09, 02, 10, 03, 11, 04, 12, 05, 13, 06, 14, 07, 15 - DEC
00, 08, 01, 09, 02, 0A, 03, 0B, 04, 0C, 05, 0D, 06, 0E, 07, 0F - HEX



Unformatted Disk



Standard Access 2 Sector Interleave



Faster Access 1 Sector Interleave

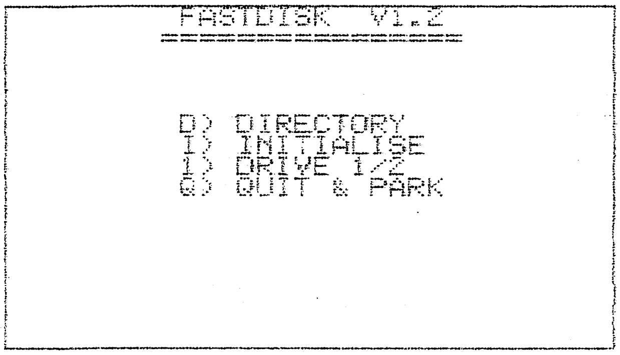
THE DIAGRAMS ABOVE SHOW ON THE LEFT AN UNFORMATTED DISK, IN THE MIDDLE THE STANDARD 2 SECTOR INTERLEAVE FORMATTING AND ON THE RIGHT 1 SECTOR INTERLEAVE FORMATTING WHICH INCREASES DISK ACCESS TIMES.

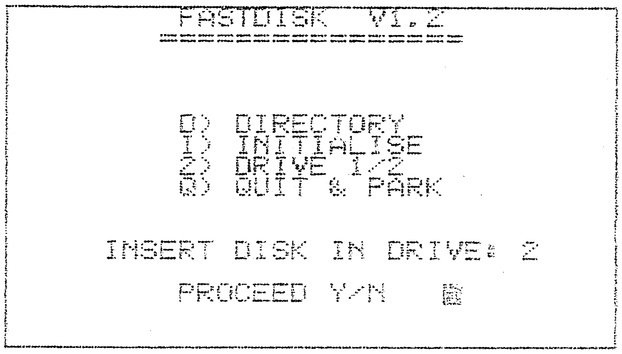
NOTE: IF THE WORD SECTORS IS NEW TO YOU, THEN YOU MAY KNOW IT AS RECORDS WHICH IS A MISNOMER. THE STATUS COMMAND WHEN USED WILL PRODUCE A RECORDS FREE MESSAGE WHICH YOU ARE ALL FAMILIAR WITH. JUST THINK OF RECORDS FREE AS SECTORS FREE.

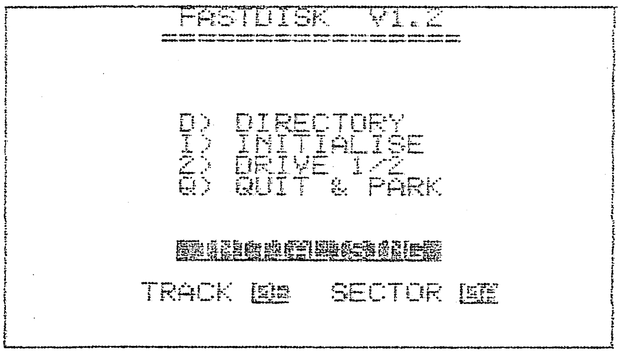
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; FASTDISK  WRITTEN BY
;    RUSSELL HARRISON
;DISASSEMBLED & ENTERED
;    BY  COLIN BRIDGE
;   EDITED & MODIFIED
;    BY JASON OAKLEY
; ORIGIN 31488 - 7B00H
          LD   A,10H
          LD   (IY+0BH),A
          LD   A,1
          LD   (7818H),A
          XOR  A
          LD   HL,(401BH)
          LD   DE,JUMP
HUNT      LD   A,(HL)
          LD   (DE),A
          INC  HL
          INC  DE
          CP   195
          JR   Z,LB1
          CP   218
          JR   Z,LB1
          CP   210
          JR   Z,LB1
          CP   194
          JR   Z,LB1
          CP   202
          JR   Z,LB1
          CP   201
          JR   Z,LB2
          JR   HUNT
LB1       LD   C,(HL)
          INC  HL
          LD   B,(HL)
          DEC  HL
          PUSH HL
          PUSH DE
          EX   DE,HL
          LD   HL,0000H
          SBC  HL,DE
          POP  DE
          ADD  HL,BC
          ADD  HL,DE
          LD   A,L
          LD   (DE),A
          INC  DE
          LD   A,H
          LD   (DE),A
          INC  DE
          POP  HL
          INC  HL
          INC  HL
          JR   HUNT
LB2       LD   BC,000AH
          LDIR
          LD   HL,JUMP
          LD   DE,0076H
          ADD  HL,DE
          LD   BC,SCTR
          LD   (HL),C
          INC  HL
          LD   (HL),B
          LD   DE,018EH
          ADD  HL,DE
          LD   (HL),C
          INC  HL
          LD   (HL),B
          EI
          LD   HL,RSCN
          LD   (79ADH),HL
          LD   A,195
          LD   (79ACH),A
          LD   HL,MESG
          CALL 2B75H
          HALT
RSCN      DI
          LD   HL,0064H
          LD   BC,00C8H
          CALL 345CH
          EI
SCAN      HALT
          LD   A,(68F7H)
          BIT  1,A
          JR   NZ,SC1
          LD   A,80H
          LD   (IY+0BH),A
          LD   A,32H
          LD   (70DBH),A
SC1       LD   A,(68F7H)
          BIT  4,A
          JR   NZ,SCCR
          LD   A,10H
          LD   (IY+0BH),A
          LD   A,31H
          LD   (70DBH),A
SCCR      LD   A,(68BFH)
          BIT  2,A
          JR   NZ,SCAN
          DI
          CALL 3450H
          LD   HL,7080H
          LD   (7820H),HL
          XOR  A
          LD   (78A6H),A
          CALL JUMP
          JR   RSCN
MESG      EQU  $
          RRA
*              FASTDISK  V1.1
          DEFB 0DH
;16 (=) EQUAL SIGNS
*              ================*
          DEFB 0DH
          DEFB 0DH
          DEFB 0DH
*            SELECT DRIVE (1/2)*
          DEFB 0DH
          DEFB 0DH
*         INSERT DISK IN DRIVE:*
* 1*
          DEFB 0DH
          DEFB 0DH
*       PRESS <RETURN> WHEN*
* READY*
```

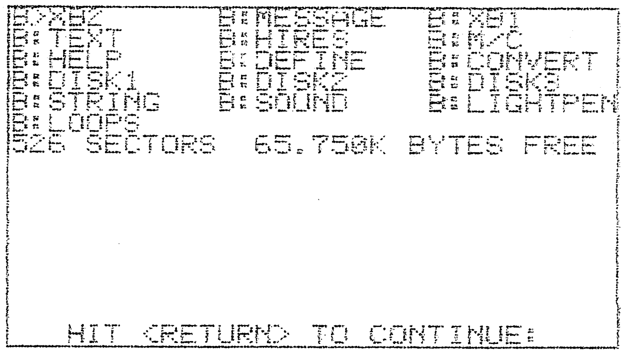
```
00125        DEFB  0DH
00126        DEFB  0DH
00127        DEFB  0DH
00128 *         =: W A R N I N G :=*
00129        DEFB  0DH
00130        DEFB  0DH
00131 *    ALL DATA WILL BE*
00132 * DESTROYED*
00133        DEFB  00H
00134 SCTR DEFB  00H
00135        DEFB  08H
00136        DEFB  01H
00137        DEFB  09H
00138        DEFB  02H
00139        DEFB  0AH
00140        DEFB  03H
00141        DEFB  0BH
00142        DEFB  04H
00143        DEFB  0CH
00144        DEFB  05H
00145        DEFB  0DH
00146        DEFB  06H
00147        DEFB  0EH
00148        DEFB  07H
00149        DEFB  0FH
00150        RST   38H
00151 JUMP NOP
00152        LD    B,E
00153        RST   38H
```

ENHANCING *FASTDISK*









NOTE: USING BREAK WILL NOT EXIT YOU TO BASIC, IT DOES'NT WORK.

THE ABOVE SAMPLE SCREEN DUMPS SHOW HOW *FASTDISK* COULD BE IMPROVED BY ADDING A MENU. DRIVE 1/2 & INITIALISE ROUTINES ARE ALREADY PRESENT AND ALL IT REQUIRES IS A DIR & STATUS FUNCTIONS PLUS A QUIT & PARK OPTION. SHOWING TRACK & SECTOR NUMBERS AS THEY ARE BEING INITIALISED OR VERIFIED WOULD TOP OFF THE ENHANCEMENTS.

LIKE A LOT OF VZ DISK DRIVE USERS I'M SICK OF THE HEAD BANGING THAT GOES ON WHEN YOU QUIT MOST PROGRAMS OR POWER UP. IF YOU WOULD LIKE TO SUBMIT THE CHANGES I WOULD BE PLEASED TO PUBLISH THEM IN A FUTURE ISSUE, ED.

NOTES: LINE 00010 LD A,0 - NORMAL SCREEN
LINE 00010 LD A,1 - INVERSE SCREEN

LINES 00134-00149 - THESE LINES DEFINE THE ORDER IN WHICH THE SECTORS ARE INITIALISED. REFER TO PAGE 4 FOR MORE DETAILS.

PARK ROUTINE BY DAVE MITCHELL 38/7

```
;DRIVE HEAD PARK ROUTINE
;BY D. MITCHELL - 07200H
CLS   EQU   01C9H
;PARK HEAD CALLS
      CALL  CLS
      LD    HL,MES1
      CALL  2B75H
      LD    HL,MES2
      CALL  2B75H
      CALL  053AH
      CALL  PARK
;RETURN TO BASIC CALL
      CALL  CLS
      LD    HL,MES3
      CALL  2B75H
      JP    1A19H
;DRIVE HEAD PARK ROUTINE
PARK  CALL  CLS
      DI
      CALL  4008H
      LD    A,27H
      SUB   (IY+14H)
      JR    Z,END
      LD    B,A
      CALL  SIN
END   CALL  400BH
      EI
      RET
SIN   LD    (IY+14H),27H
      SLA   B
SIN1  LD    A,(IY+38H)
      LD    C,A
      RLCA
      PUSH  AF
      LD    (IY+38H),A
      OR    C
      CALL  MOVE
      CALL  DLY
      POP   AF
      CALL  MOVE
      CALL  DLY
      DJNZ  SIN1
      RET
DLY   PUSH  BC
      LD    BC,2
      CALL  4038H
      POP   BC
      RET
MOVE  AND   0FH
      LD    C,A
      LD    A,0F0H
      AND   (IY+33H)
      OR    C
      LD    (IY+33H),A
      OUT   (10H),A
      RET
;PARK ROUTINE MESSAGES
MES1  EQU   $
      DEFB  1FH
*      PARK BY DAVE MITCHELL*
      NOP
MES2  EQU   $
      DEFB  0DH
*OPEN DOOR & PRESS *
*<RETURN>   *
      NOP
MES3  EQU   $
      DEFB  1FH
*       DRIVE HEAD IS PARKED*
      NOP
```

HANDS UP THOSE THAT HATE THE NOISES WHICH COME FROM THE DRIVE HEAD WHEN THE VZ IS RESET OR POWERED UP. THE REASON FOR THE BASHING NOISES IS THE DOS DOESN'T KNOW WHERE THE DRIVE HEAD WAS LEFT SO IT MUST BE SET TO TRACK ZERO, HENCE THE DOS MOVES THE DRIVE HEAD 40 TIMES, THAT IS A LOT OF HEAD BASHING GOING ON.

THIS LITTLE ROUTINE WHICH I CALLED PARK, IS USED IN THE LATEST VERSION WORD PROCESSOR PATCH3.3. IT PLACES THE DRIVE HEAD OF DRIVE 1 AT TRACK 39. I USE THIS ROUTINE BEFORE I TURN THE POWER OFF, ON THE VZ AND WHEN I SWITCH ON ALL THAT I HEAR IS THE DRIVE HEAD MOVING TO TRACK ZERO WITHOUT THE HORRIBLE BASHING THAT WENT ON BEFORE.

ALL THAT WE ARE REALLY DOING IS FINDING THE DIFFERENCE BETWEEN THE CURRENT LOCATION OF THE DRIVE HEAD AND TRACK 39 AND MOVING THE DRIVE HEAD TO TRACK 39. SO WHEN THE VZ IS RESET OR POWERED UP THE DRIVE HEAD MOVES TO TRACK ZERO.

ED'S NOTE: PARK HAS BEEN RE-PRINTED FOR TWO REASONS:

1) PARK HAS BEEN MODIFIED BY CLEARING THE SCREEN FIRST AND INCLUDING OPTION TO OPEN DRIVE DOOR BEFORE PARKING HEAD WITH APPROPRIATE MESSAGES BEING DISPLAYED.

2) SOFTWARE WRITERS BY INCLUDING PARK IN THEIR PAST, PRESENT AND FUTURE PROGRAMS HAVE THE OPPORTUNITY TO PROLONG THE LIFE OF ALL OF OUR DISK DRIVES. YOUR/OUR DRIVES ARE IN YOUR HANDS.

ASSEMBLY LANGUAGE BY B.KITCH

A COWARD'S INTRODUCTION:

ASSEMBLY LANGUAGE PROGRAMMING CAN ACCOMPLISH MIRACLES, BUT IT IS MADE TO SEEM ALMOST AS MYSTERIOUS AS BABYLONIAN HIEROGLYPHICS! MOST USERS ARE FAIRLY WELL VERSED IN BASIC PROGRAMMING BUT DO NOT OFTEN VENTURE INTO THE REALMS OF ASSEMBLY LANGUAGE. THIS IS A PITY, AS ASSEMBLER CAN ACHIEVE THINGS THAT BASIC HAS NEVER DREAMED OF.

ONE OF THE NICE THINGS ABOUT BASIC IS THAT YOU CAN SEE THE RESULTS STRAIGHT AWAY. TYPE IN PRINT"HELLO", PRESS <RETURN>, AND THE VZ DISPLAYS "HELLO" ON THE SCREEN. THIS IS GREAT ENCOURAGEMENT TO GO ON FROM. ASSEMBLER, ON THE OTHER HAND, HAS ALWAYS BEEN PRESENTED AS A MASSIVE TASK, REQUIRING THE MASTERING OF STRANGE REGISTERS, INDIRECT ADDRESSING AND OTHER THINGS THAT BOGGLE THE MIND OF A BASIC PROGRAMMER. IF ONLY YOU COULD DO SOMETHING SIMPLE WITH ASSEMBLER THAT WOULD SHOW RESULTS RIGHT AWAY.

THIS ARTICLE IS ABOUT STARTING OFF SLOWLY WITH ASSEMBLER - AND ACHIEVING SOME NICE SMALL THINGS WIH IT. IT ALSO BUILDS UPON MY FAST BASIC THEME AND SOME POWERFUL APPLICATIONS HAVE BEEN PRESENTED IN THAT HYBRID LANGUAGE. SOME OF THE PROGRAMS WRITTEN AND PRESENTED IN USER GROUP MAGAZINES INCLUDE, REAL TIME CLOCK, SCREEN PRESERVER, LIVENUP AND TONE GENERATOR. WE WILL DEVELOP SOME FAST BASIC LISTINGS AND GAIN SOME INSIGHT INTO Z80 ASSEMBLY LANGUAGE IF YOU WANT TO.

1. DOING IT FROM BASIC:

BEFORE WE START PROGRAMMING, IT IS NECESSARY TO POSE A PROBLEM! LET'S DO SOMETHING IN HI-RES GRAPHICS (MODE(1) BECAUSE THIS IS A LITTLE CHALLENGING. A COMMONLY REQUIRED PROBLEM IS TO INITIALIZE THE HI-RES SCREEN IN ONE OF THE FOUR COLOURS THAT IT IS CAPABLE OF DISPLAYING.

NORMALLY FROM BASIC, THE SCREEN COMES UP IN THE DEFAULT COLOURS OF GREEN OR BUFF, DEPENDING UPON THE BACKGROUND VALUE (B = 0 OR 1) THAT IS SET BY THE COLOR,B COMMAND. SOME APPLICATIONS LOOK BETTER IF THE HI-RES SCREEN IS YELLOW/CYAN, BLUE/MAGENTA OR RED/ORANGE WHEN INITIALIZED. THE CLS COMMAND CANNOT SET-UP THE SCREEN IN THESE ALTERNATE COLOURS. WE WILL FIRST OF ALL WRITE A PROGRAM USING STANDARD BASIC COMMANDS TO ACHIEVE A BLUE HI-RES SCREEN.

LISTING 1 IS CALLED SNAIL GRAPHICS (FOR OBVIOUS REASONS). ENTER THE PROGRAM AND RUN IT. ALL OF THE COMMANDS SHOULD BE READILY UNDERSTANDABLE. IF THEY ARE NOT, THEN YOU ARE PROBABLY NOT YET SUFFICIENTLY EXPERIENCED TO PROCEED TO THE NEXT STEP.

SNAIL GRAPHICS VERSION 1.1 USES A DOUBLE NESTED LOOP AND THE SET COMMAND TO FILL THE HI-RES SCREEN. THE COLOUR OF THE SCREEN CAN BE ALTERED BY CHANGING THE FOREGROUND COLOUR IN LINE #130. THE TWO SOUND COMMANDS ARE USED SO THAT THE TIME TAKEN TO FILL THE SCREEN CAN BE MEASURED WITH A STOP WATCH. ISN'T IT PAINFUL! IT TAKES ALMOST ONE MINUTE TO DO IT. THIS IS MUCH TOO SLOW FOR SUCH A SIMPLE EXERCISE.

OBSERVE THAT THE USE OF THE SET COMMAND REQUIRES THAT ALL SCREEN PIXELS, IN THE RANGE OF 0 TO 63 AND 0 TO 127 IN THE VERTICAL AND HORIZONTAL DIRECTIONS RESPECTIVELY, BE SET. THE COLOUR OF THE PIXEL IS DETERMINED IN THE COLOR COMMAND. NO KNOWLEDGE OF THE MEMORY LOCATIONS OF THE SCREEN (VIDEO RAM), OR THE VALUES TO WHICH THE MEMORY LOCATIONS ARE SET, TO ACHIEVE THE COLOUR REQUIRED BY THE PROGRAMMER. THE PENALTY FOR THIS SIMPLE APPROACH IS TIME.

LET'S NOW INVESTIGATE HOW WE CAN SPEED-UP THIS SCREEN FILL PROBLEM.

2. STILL IN BASIC:

TAKE A LOOK AT LISTING 2. TO UNDERSTAND SNAIL GRAPHICS VERSION 2.3 YOU MUST HAVE WORKED WITH GRAPHICS AND PROGRESSED TO PEEKS AND POKES INTO THE VIDEO RAM AREA. NOTICE THAT ONLY A SINGLE NESTED LOOP IS REQUIRED IN THIS VERSION. ALSO THE POKE TO THE VIDEO AREA IN LINE #210 ACTUALLY SETS FOUR PIXELS RATHER THAN ONE.

THE SOUND COMMANDS ALLOW TIMING OF THE SCREEN FILL AND A VALUE OF AROUND 8.3 SECONDS SHOULD BE OBTAINED. THIS IS OBVIOUSLY A PRETTY SOUPED UP VERSION USING THE BASIC LANGUAGE. SOME OTHER SMALL CHANGES TO THE PROGRAM COULD GET THE TIMING DOWN TO ABOUT 8.0 SECONDS - A HUGE IMPROVEMENT OVER VERSION 1.1. BUT WE ARE REALLY LOOKING FOR A NEAR INSTANTANEOUS METHOD, SO LET'S PROGRESS TO ASSEMBLER.

3. THE VISIBLE Z80:

I INTRODUCE A TECHNIQUE HERE THAT I HAVE NOT SEEN TRIED ANYWHERE ELSE, AND THAT IS TO EXAMINE Z80 ASSEMBLER AS IF IT RESEMBLED BASIC. THIS SHOULD MAKE THE UNDERSTANDING OF ASSEMBLER APPEAR AS A SIMPLER AND MORE FAMILIAR STEP FOR PROGRAMMERS. THE METHOD WAS INTRODUCED IN MY PROGRAM CALLED LOGIC OPERATIONS THAT HAS BEEN PREVIOUSLY PUBLISHED. IN THAT PROGRAM BOOLEAN LOGIC OPERATORS AND THE FLAG REGISTER OF THE Z80 WERE SIMULATED. IN THE NEXT LISTING I USE BASIC TO SIMULATE THE POWERFUL Z80 BLOCK MOVE INSTRUCTION.

BEFORE INTRODUCING THE THIRD LISTING, I NEED TO DIVERGE TO DISCUSSING ASSEMBLY LANGUAGE. IN ALL TEXTS AND ARTICLES INTRODUCING Z80 ASSEMBLER, THE BLOCK MOVE IS INTRODUCED AS ONE OF THE SIMPLER OPCODES TO COMPREHEND. I AGREE WITH THIS, AND IT IS WHY I CHOSE TO USE A SCREEN FILL AS THE PROGRAMMING EXAMPLE IN THIS INTRODUCTION. I WILL ENDEAVOUR TO EXPLAIN THE BLOCK MOVE INSTRUCTION IN PLAIN ENGLISH SO THAT IT CAN BE COMPREHENDED. (THE BLOCK MOVE INSTRUCTION HAS BEEN DESCRIBED IN MY HI- AND LO- RES SCREEN PRESERVER ARTICLE).

THE Z80 BLOCK MOVE TAKES A NUMBER OF FORMS BUT THE ONE WE WILL USE HAS THE MNEMONIC LDIR. WHAT DOES THIS GOBBLY-GOOK MEAN? FIRSTLY, LD MEANS LOAD; THIS IMPLIES A TRANSFER OF A VALUE FROM A SOURCE LOCATION TO A DESTINATION LOCATION. SECONDLY, THE I MEANS INCREMENT OR INCREASE BY ONE; IMPLYING THAT A PROGRESSIVE TRANSFER, OR FILLING, OF THE DESTINATION WITH THE VALUE IS TO OCCUR.

AND FINALLY, THE R MEANS REPEAT FOR A CERTAIN NUMBER OF TIMES, OR COUNT. DOES THIS LOOK AS THOUGH IT IS USEFUL TO SOLVING OUR SCREEN FILL PROBLEM? LET'S THINK A LITTLE FURTHER. (IF YOU REFLECT UPON LISTINGS 1 AND 2, YOU WILL SEE THAT THESE FOUR PARAMETERS ARE ALSO REQUIRED BY BASIC).

WE CERTAINLY NEED TO FILL A WELL-DEFINED AREA OF MEMORY. THE VIDEO RAM FOR THE HI-RES SCREEN IS 800H (2048D) BYTES LONG. THIS SUGGESTS COUNT OR SIZE. THE VIDEO RAM COMMENCES AT ADDRESS 7000H (28672D) AND ENDS AT 77FFH (30719D). NOTE THAT THIS IS 800H OR 2048D BYTES LONG. (YOU MAY NEED TO THINK ABOUT THAT ONE)! THE STARTING ADDRESS OF THE SCREEN SUGGESTS A DESTINATION FOR THE COMMENCEMENT OF THE BLOCK FILL.

THE ACTUAL VALUE TO BE PLACED IN VIDEO RAM IS TO BE SUPPLIED BY THE USER AS THIS DETERMINES THE COLOUR OF THE SCREEN - RECALL LISTING 2. THE ACTUAL LOCATION OF THE VALUE CAN BE REGARDED AS THE SOURCE FOR THE BLOCK FILL. BY REPEATEDLY LOADING THE SOURCE VALUE TO THE DESTINATION FOR A CERTAIN COUNT, AND INCREMENTING THE DESTINATION, WE SHOULD BE ABLE TO FILL THE VIDEO RAM WITH A PARTICULAR VALUE. O.K., SO THE LDIR OPCODE APPEARS AS IF IT WILL DO THE JOB FOR US.

CONTINUED NEXT ISSUE . . .

LISTING 1:

```
00010 '*********************************************************
00020 '***    SNAIL GRAPHICS DEMO - HI-RES VERSION 1.1      ***
00030 '***               BOB KITCH - 22/5/86                ***
00040 '***          EXECUTION TIME: 57.6 SECOND             ***
00050 '*********************************************************
00060 '
00100 'SET TO HI-RES.
00120 MODE(1)
00130 COLOR 3,0 :'RED ON GREEN
00140 SOUND 10,1
00200 FOR V=0 TO 63
00210    FOR H=0 TO 127
00220       SET(H,V)
00230    NEXT H
00240 NEXT V
00250 SOUND 10,1
00260 FOR I=0 TO 2000:NEXT I
00270 STOP
00280 END
```

LISTING 2:

```
00010 '*********************************************************
00020 '***    SNAIL GRAPHICS DEMO - HI-RES VERSION 2.3      ***
00030 '***               BOB KITCH - 22/5/86                ***
00040 '***          EXECUTION TIME 8.3 SECONDS              ***
00050 '*********************************************************
00060 :
00100 'SET TO HI-RES.
00120 MODE(1)
00130 COLOR ,0 :'GREEN BACKGROUND.
00140 V%=170:SOUND 10,1:'RED.
00200 FOR I%=28672 TO 30719
00210    POKE I%,V%
00220 NEXT I%
00250 SOUND 10,1
00260 FOR I=0 TO 2000:NEXT I
00270 STOP
00280 END
```

THUNDERSTORMS: PRINTERS & COMPUTERS:

LAST NIGHT WHEN THE THUNDER STARTED I SWITCHED OFF MY STAR NX1000 PRINTER AND THE REST OF MY COMPUTER GEAR AND DIDN'T USE IT TILL THIS MORNING. ON POWER UP THIS MORNING EVERYTHING WAS OK EXCEPT FOR THE PRINTER. IT WAS PRINTING OUT GARBAGE. I REPLACED THE 74LS05 HEX INVERTER WHICH WENT ONCE BEFORE AND BINGO I WAS BACK IN BUSINESS.

ALL THE GEAR INCLUDING THE PRINTER WAS SWITCHED OFF AT THE UNIT AND THE POWER POINT AS WELL EXCEPT FOR THE PRINTER AND IT WAS THE ONLY ITEM DAMAGED. THE LESSON FROM THIS IS TO MAKE SURE WHEN THUNDERSTORMS ARE AROUND OR WHEN YOU ARE FINISHED FOR THE DAY TO **SWITCH OFF** AT THE **UNIT** AND THE **POWER POINT.**

WANTED: - CIRCUIT DIAGRAM OR SERVICE MANUAL FOR THE STAR NX1000 PRINTER. THE REPAIR MAN CHARGED ME $154 ($70.00 AN HOUR) PLUS PARTS LAST TIME. BESIDES HELPING REPAIR THE PRINTER IN THE FUTURE I'LD LIKE TO SEE IF I CAN INCREASE THE PRINTER BUFFER? CONTACT EDITOR.

KSCAN BY LESLIE MILBURN

A NEW KEYBOARD SCANNER FOR VZ200/300 PART-1

HAVING RECENTLY SUBSCRIBED TO THE HUNTER VALLEY VZ JOURNAL, I NOTED WITH INTEREST THE EARLIER ARTICLES WHICH SHOWED HOW TO HOOK UP THREE NEW KEYS/SWITCHES TO THE VACANT AREA'S ON THE KEYBOARD MATRIX AND ALSO HOW TO IMPLEMENT A SHIFT/LOCK. I DECIDED TO GO ONE STEP FURTHER AND HOOK UP AN ENTIRE NEW KEYBOARD.

AS I USE AN IBM AT WORK THE OBVIOUS CHOICE WAS AN IBM 101 KEY KEYBOARD. THIS IS READILY AVAILABLE BUT A BIT EXPENSIVE IF BUYING A NEW ONE. HAVING COMPLETED THE MONUMENTOUS TASK OF REWIRING THIS ENTIRE KEYBOARD I THEN TURNED MY HAND TOWARD THE SOFTWARE SIDE OF THINGS.

BEFORE I DESCRIBE KSCAN IN DETAIL YOU MAY FIND IT USEFUL TO KNOW A LITTLE BIT ABOUT HOW MY KEYBOARD IS WIRED. AS I MENTIONED ABOVE, MY NEW KEYBOARD HAS 101 KEYS, HOWEVER THE VZ KEYBOARD MATRIX HAS ONLY SPACE FOR 48 KEYS. AS YOU CAN IMAGINE SOME THOUGHT WAS PUT IN BEFORE ACTUALLY WIRING THE KEYBOARD. BELOW IS THE KEYBOARD MATRIX FOR MY NEW KEYBOARD:-

ROW NO.	ROW ADDRESS	BIT POSITION 5	4	3	2	1	0
7	68FEH	R	Q	E	ALT	W	T
6	68FDH	F	A	D	CTRL	S	G
5	68FBH	V	Z	C	SHFT	X	B
4	68F7H	4	1	3	=	2	5
3	68EFH	M	SPC	,	/	.	N
2	68DFH	7	0	8	-	9	6
1	68BFH	U	P	I	RETN	O	Y
0	687FH	J	;	K	,	L	H

AS YOU CAN SEE ONLY COLUMN 2 IS DIFFERENT FROM THE STANDARD KEYBOARD MATRIX, THE ALT KEY IS OF SPECIAL INTEREST (ROW 7, COLUMN 2). THE ALT KEY IS SIMILIAR TO THE SHIFT AND CTRL KEYS AND ALLOWS AN EXTRA KEY COMBINATION. THE REASON I DID THIS WAS BECAUSE THE VZ USES SOME SHIFT-LETTER COMBINATIONS FOR GRAPHICS CHARACTERS BUT STANDARD KEYBOARDS ALWAYS HAVE SHIFT-LETTER COMBINATIONS FOR UPPER CASE. AS YOU WILL SEE LATER, WITH KSCAN EACH APPLICATION CAN REDEFINE ANY KEY COMBINATION.

APART FROM THE ADDITIONAL ALT KEY, MY KEYBOARD ALSO HAS A NUMERIC KEYPAD AND A FEW OTHER NEW KEYS. BELOW IS A LIST OF SOME KEY EQUIVALENCES:-

ESC = SPACE
PAUSE = ALT X
PRINT SCREEN = ALT ;

BEFORE I ACTUALLY STARTED CODING, I LISTED THE GOALS I HOPED TO ACHIEVE. I'LL LET YOU JUDGE WHETHER I ACTUALLY DID GET CLOSE. THESE WERE MY GOALS:-

(1) KSCAN MUST BE CAPABLE OF WORKING WITH ANY KEYBOARD (INCLUDING THE STANDARD VZ KEYBOARD).

(2) LITTLE OR NO ASSUMPTIONS SHOULD BE MADE ABOUT THE KEYBOARD MATRIX.

(3) EACH KEY MUST BE REDEFINABLE.

(4) KSCAN MUST BE RELOCATABLE.
(5) KSCAN MUST WORK WITH BASIC, BOTH IN IMMEDIATE MODE AND WHILE A BASIC PROGRAM IS RUNNING. SPECIFICALLY INPUT AND INKEY$ MUST USE KSCAN.
(6) THE DRIVER MUST BE COMPACT AND FAST.
(7) KSCAN MUST BE AVAILABLE FOR MACHINE CODE PROGRAMS TO USE. SPECIFICALLY QUICKWRITE II.

THE CURRENT KEY SCANNING ROUTINES.

IT WAS NECESSARY TO EXAMINE THE VZ ROM ROUTINES TO SEE HOW THE KEYBOARD IS CURRENTLY SCANNED. IN THE COMMUNICATIONS REGION OF RAM, A RESERVED AREA CONTAINS INFORMATION REGARDING THE KEYBOARD. THIS IS KNOWN AS THE KEYBOARD DEVICE CONTROL BLOCK (KDCB). AT LOCATION 7816H, THE ADDRESS OF THE KEY SCANNING ROUTINE IS CALLED WHENEVER AN INKEY$ COMMAND IS PROCESSED. BY DEFAULT, THE ADDRESS STORED HERE IS 2EF4H WHICH, IF YOU REFER TO THE VZ TECHNICAL MANUAL, IS THE STANDARD KEY SCANNING ROUTINE.

THE KEYBOARD IS ALSO SCANNED EACH TIME AN INTERRUPT OCCURS. THIS SCAN IS USED IN IMMEDIATE MODE AND WHILST THE INPUT COMMAND IS PROCESSED.

INSTALLING KSCAN

FROM MY FINDINGS DETAILED ABOVE, INSTALLING KSCAN WAS NOT AS DIFFICULT AS I THOUGHT. JUST STORE THE LOCATION OF KSCAN IN 7816H AND INSURE THAT UPON EACH INTERRUPT KSCAN IS CALLED INSTEAD OF THE DEFAULT. IF YOU REFER BACK TO THE JOURNAL $24, THERE IS AN ARTICLE WHICH EXPLAINS IN DETAIL ABOUT INTERRUPT ROUTINES.

ALL I SHALL WRITE HERE IS THAT UPON EACH INTERRUPT A CALL TO LOCATION 787DH IS MADE. THIS ADDRESS IS REFERED TO AS THE INTERRUPT EXIT IN THE VZ TECHNICAL MANUAL. BY DEFAULT, THIS RETURNS IMMEDIATELY BACK TO THE CALLING ROM ROUTINE WHICH THEN BASICALLY FLASHES THE CURSOR (IF WAITING FOR USER INPUT), SCANS THE KEYBOARD AND BEEPS.

TO REPLACE THE DEFAULT KEY SCANNING ROUTINE IN ROM IT IS NECESSARY TO PROVIDE A NEW INTERRUPT ROUTINE. THIS IS DONE SIMPLY BY MAKING THE INTERRUPT EXIT POINT TO OUR NEW ROUTINE.

HOW KSCAN WORKS

KSCAN IS ACTUALLY BASED ON THE SCANNING ROUTINE USED IN THE QUICKWRITE WORD PROCESSOR. HOWEVER, KSCAN IS APPLICATION INDEPENDANT.

FOR EACH ROW OF THE KEYBOARD MATRIX A CORRESPONDING KEY TABLE EXISTS IN RAM. BASICALLY, WHEN A KEY IS PRESSED THE FOLLOWING OCCURS:-

(1) CHECK IF ANY COMBINATION OF THE ALT, CTRL AND SHIFT KEYS WERE PRESSED.
(2) CHECK IF ANY OTHER KEY WAS PRESSED. IF NOT THEN EXIT WITH KEY CODE NULL.
(3) CONVERT THE ROW, COLUMN AND ALT/CTRL/SHIFT STATUS INTO A KEY TABLE ADDRESS.
(4) EXIT WITH KEY CODE STORED AT THE CURRENT KEY TABLE ADDRESS.

BELOW IS AN EXAMPLE OF A KEY TABLE. THIS TABLE IS FOR ROW Ø OF THE KEYBOARD MATRIX.

COL	NORM	ALT	CTL	ALT/CTL	SHFT	ALT/SHFT	CTL/SHFT	ALT/CTL/SHFT
Ø	H	GR7			H			
1	L		INS		L			
2	,				"			
3	K				K			
4	;	PSCR	RUB	SYSRQ	:			
5	J	GR16			J			

ACTION KEYS (TRAPPING KEYSTROKES)

THE DEFAULT KEYBOARD SCANNING ROUTINE (AT 2EF4H) JUST RETURNS THE CODE OF THE KEY PRESSED WHICH IS THEN ACTED UPON BY THE APPLICATION. HOWEVER, IN SOME CASES IT WOULD BE NICE IF A KEYSTROKE WAS ACTED UPON IMMEDIATELY. TWO EXAMPLES OF THIS ARE A PAUSE KEY AND A PRINT SCREEN KEY.

KSCAN DOES THIS BY RESERVING A FEW KEY CODE VALUES TO INDICATE WHETHER A SPECIAL ACTION IS TO BE TAKEN OR JUST RETURN THE CODE BACK TO THE APPLICATION. THE KEY CODES RESERVED BY KSCAN ARE ALSO REFERED TO AS FUNCTION IDS AND ARE AS FOLLOWS:-

Ø (NULL) – NO KEY PRESSED.
1 (USE1) – APPLICATION PROVIDED KEY TRAP FUNCTION ID (USER)
2 (PLT) – APPLICATION INDEPENDANT KEY PLOT FUNCTION ID (PLOT)
3 (SYS1) APPLICATION INDEPENDANT KEY TRAP FUNCTION ID (SYSTEM)
4 (SYS2) USER/SYSTEM FUNCTION ID. INDICATES CALL PRIOR TO KEYBOARD SCAN.

AS INDICATED, THREE DIFFERENT KEY TRAP FUNCTIONS ARE AVAILABLE:-

(1) THE SYSTEM FUNCTION

THE SYSTEM FUNCTION CONTROLS THE EXECUTION OF VARIOUS ROUTINES WHICH ARE NOT UNIQUE TO ANY APPLICATION OR ARE COMMON ACROSS APPLICATIONS. ONCE THESE ROUTINES HAVE BEEN ESTABLISHED THE SYSTEM FUNCTION SHOULD NOT CHANGE. THE ROUTINES I HAVE PROVIDED ARE SPECIFIC TO THE KEYS I HAVE AVAILABLE ON MY KEYBOARD. IF YOUR VZ HAS A STANDARD KEYBOARD YOU MAY DECIDE TO UTILIZE THE UNUSED KEY COMBINATIONS SHIFT – X,C,V & B AS ACTION KEYS.

THE SYSTEM FUNCTION CAN BE CALLED TWICE. IT IS ALWAYS CALLED BEFORE THE KEYBOARD IS SCANNED AND IS ALSO CALLED IF THE KEYBOARD SCAN RETURNS FUNCTION ID SYS1. I.E. SYS1 WAS STORED IN THE KEY TABLE. TO DIFFERENTIATE BETWEEN THE CALLS A DIFFERENT FUNCTION ID IS STORED IN THE A REGISTER.

IF THE CALL IS BEFORE THE KEYBOARD SCAN FUNCTION ID IN THE A REGISTER IS SYS2. UPON EXIT THE CARRY FLAG INDICATES WHETHER A KEYBOARD SCAN IS TO BE DONE OR NOT. THIS GIVES A SYSTEM ROUTINE THE FLEXIBILITY TO PERFORM ITS OWN KEYBOARD SCAN. AN EXAMPLE IS THE PAUSE ROUTINE.

IF THE CALL IS BECAUSE OF A KEY PRESS THE FUNCTION ID IS SYS1. THE C REGISTER CONTAINS THE COLUMN, THE HL REGISTERS CONTAIN THE ROW ADDRESS AND THE E REGISTER CONTAINS THE ALT/CTRL/SHIFT STATUS. UPON EXIT THE A REGISTER CAONTAINS A KEY CODE (USUALLY NULL).

(2) THE PLOT FUNCTION

THIS FUNCTION HAS NOT YET BEEN IMPLEMENTED. THE INTENTION IS TO MAKE USE OF THE EXTENDED GRAPHICS CAPABILITIES OF A MODIFIED VZ (REFER TO JOURNAL #22). HOWEVER, AS YET I HAVE NOT DONE THIS HARDWARE MODIFICATION. HERE ARE A FEW IDEAS FOR THOSE OF YOU THAT HAVE:-

* THE LOWER CASE CHARACTERS COULD BE PLOTTED, AND
* THE IRRITATING CARET CHARACTER COULD BE REPLACED.

NOTE THAT THE PRINT COMMAND WOULD HAVE TO BE INTERCEPTED AND MAY BE OTHER BASIC COMMANDS.

(3) THE USER FUNCTION

THE USER FUNCTION CONTROLS THE EXECUTION OF VARIOUS ROUTINES WHICH ARE SPECIFIC TO AN APPLICATION AND AS SUCH MUST BE PROVIDED BY EACH APPLICATION.

LIKE THE SYSTEM FUNCTION, THE USER FUNCTION CAN ALSO BE CALLED TWICE. IT IS ALWAYS CALLED BEFORE THE KEYBOARD SCAN BUT JUST AFTER THE SYSTEM FUNCTION CALL. IT IS ALSO CALLED IF A KEYBOARD SCAN RETURNS FUNCTION ID USR1. AS WITH THE SYSTEM FUNCTION, THE A REGISTER CONTAINS THE FUNCTION ID WHICH ALLOWS THE USER FUNCTION TO DIFFERENTIATE BETWEEN THE CALLS.

IF THE CALL IS BECAUSE OF A KEYPRESS THE FUNCTION ID IS USR1. THE C REGISTER CONTAINS THE COLUMN, THE HL REGISTERS CONTAIN THE ROW ADDRESSES AND THE E REGISTER CONTAINS THE ALT/CTRL/SHIFT STATUS. UPON EXIT THE A REGISTER CONTAINS A KEY CODE OR FUNCTION ID. THIS ALLOWS THE FLEXIBILITY OF FORCING A SYSTEM OR PLOT FUNCTION CALL, BUT IT IS USUALLY NULL.

<u>NOTE:</u> A USER FUNCTION REMAINS LOADED UNTIL REPLACED BY ANOTHER USER FUNCTION OR IT IS DISABLED (SEE LATER).

<u>UNDOCUMENTED KEY CODES</u>

IN THE VZ UNIT AND TECHNICAL MANUALS ARE LISTS OF VARIOUS KEY CODES. IN ADDITION TO THOSE LISTED ARE SOME I HAVE FOUND WHILST EXAMINING THE VZ ROM ROUTINES.

1 - BREAK KEY PRESSED.
29 - PLACE CURSOR AT THE START OF CURRENT INPUT LINE.

IF YOU KNOW OF ANY OTHERS PLEASE LET ME KNOW.

CONTINUED NEXT ISSUE . . .

BASE NUMBER CONVERTER

BY DAVE MITCHELL

```
00000 '*************************************************************
00002 '*  CONVERT POS & NEG DEC TO HEX TO BINARY TO LO & HI BYTE  *
00004 '*    MODIFIED AND ENHANCED FOR THE VZ BY DAVE MITCHELL     *
00006 '*************************************************************
00008 :
00010 POKE 30862,0:POKE 30863,114:POKE 29184,243:POKE 29185,201
00015 POKE 30777,1:CLEAR 400
00020 Z$="                               ":REM 31 SPACES
00030 CLS:PRINT" THIS UTILITY WILL DISPLAY THE   EQUIVALENT";
00040 PRINT" VALUES OF POS & NEG  DECIMAL, BINARY, HEX AND LSB &"
00050 PRINT" MSB VALUES TO SCREEN & PRINTER"
00055 PRINT@169,"D)ECIMAL VALUE"
00060 PRINT@201,"N)EG.DEC VALUE"
00070 PRINT@233,"B)INARY  VALUE"
00080 PRINT@265,"H)EX     VALUE"
00090 PRINT@297,"L)SB+MSB VALUE"
00095 PRINT@329,"P)RINT   VALUE"
00100 PRINT@360,"================"
00102 PRINT@392,"SELECT  FUNCTION"
00104 :
00110 AA$=INKEY$:A$=INKEY$:IF A$=""THEN 110
00120 SOUND30,1
00130 IF A$="D"THEN GOSUB 180:GOSUB 230:GOTO 100
00140 IF A$="B"THEN GOSUB 180:GOSUB 240:GOTO 100
00150 IF A$="H"THEN GOSUB 180:GOSUB 250:GOTO 100
00155 IF A$="N"THEN GOSUB 180:GOSUB 235:GOTO 100
00160 IF A$="L"THEN GOSUB 180:GOSUB 720:GOTO 100
00165 IFA$="P"THENGOSUB310
00170 GOTO 110
00180 PRINT@0,Z$:PRINT@32,Z$:PRINT@64,Z$:PRINT@96,Z$
00190 PRINT@0,"DECIMAL =":PRINT@32,"HEX     ="
00200 PRINT@64,"BINARY  =":PRINT@96,"L.S.B   ="
00210 PRINT@113,"M.S.B. =":RETURN
00220 PRINT@448,Z$:RETURN
00230 GOSUB 410:GOSUB 540:RETURN:REM ....... POS DEC NO
00235 GOSUB 750:RETURN:REM ................. NEG DEC NO
00240 GOSUB 470:GOSUB 540:RETURN:REM ....... BINARY  NO
00250 GOSUB 620:GOSUB 420:RETURN:REM ....... HEX     NO
00290 :
00300 REM...........PRINT NUMBERS
00310 IF C<=32767 THEN 330
00320 LPRINT"DECIMAL VALUE ="C;"( ";INT(C-65536);")":GOTO 340
00330 LPRINT"DECIMAL VALUE ="C
00340 LPRINT" HEX     VALUE = ";H1$
00350 LPRINT" BINARY VALUE = ";C$
00360 LPRINT" LSB     VALUE =";E2
00370 LPRINT" MSB     VALUE =";E1
00380 LPRINT"................................":REM 32 FULL STOPS
00390 C$="":H1$="":RETURN
00395 :
00410 B$="":PRINT@448,"ENTER DECIMAL VALUE";:INPUT D:C=D:GOSUB 220
00420 X=USR(0):B=D/2:D=INT(B):IF B=D THEN B$="0"+B$ ELSE B$="1"+B$
00430 IF D>0 THEN 420ELSE PRINT@74,B$
00440 C$=B$:B$=""
00450 PRINT@9,C:IF C<=32767 THEN RETURN
00460 PRINT@20,CHR$(104);" ";C-65536;CHR$(105):RETURN
00470 D=0:PRINT@448,"ENTER BINARY ";:INPUT B$:C$=B$
00475 GOSUB 220:IF B$=""THEN SOUND 30,1:GOTO 55
00480 X=USR(0)
```

```
00490 FORI=LEN(B$)TO1STEP-1:IFMID$(B$,I,1)="1"THEND=D+2^(LEN(B$)-I
00500 NEXT:PRINT@74,C$
00510 IF D<=32767 THEN 530
00520 PRINT@20,CHR$(104);" ";INT(D-65536);CHR$(105)
00530 PRINT@9,D:C=D:D=0:B$="":I=0:RETURN
00540 X=USR(0):AD=C
00550 B=INT(AD/256):E1=INT(B):GOSUB 580:H$=B$
00560 B=AD-(256*B):E2=INT(B):GOSUB 580:H$=H$+B$
00570 PRINT@42,H$:H1$=H$:PRINT@105,E2:PRINT@121,E1:RETURN
00580 H=INT(B/16):L=B-(H*16):B$=""
00590 D=H:GOSUB 600:D=L:GOSUB 600:RETURN
00600 IF D>9 THEN B$=B$+CHR$(55+D) ELSE B$=B$+CHR$(48+D)
00610 RETURN
00620 PRINT@448,"ENTER HEX EG. 0000 ";:INPUT H$:H1$=H$:GOSUB 220
00625 IF H$=""THEN SOUND 30,1:GOTO 55
00630 X=USR(0):H$=RIGHT$(H$,4)
00640 HH$=LEFT$(H$,2):GOSUB 680:E=H*256:E1=H
00650 HH$=RIGHT$(H$,2):GOSUB 680:E=E+H:E2=H
00660 PRINT@42,H1$:D=E:C=E:B$="":PRINT@105,E2:PRINT@121,E1
00670 RETURN
00680 H=0:A$=LEFT$(HH$,1):GOSUB 700:H=D*16
00690 A$=RIGHT$(HH$,1):GOSUB 700:H=H+D:RETURN
00700 D=ASC(A$):IFD<58THEND=D-48ELSED=D-55
00710 RETURN
00720 B$="":PRINT@448,"ENTER LSB ";:INPUT S:'GOSUB 222
00730 PRINT@467,"MSB ";:INPUT M:GOSUB 220:X=USR(0)
00740 D=S+256*M:C=D:S=0:M=0:GOSUB420:GOSUB 540:RETURN
00745 :
00750 PRINT@448,"ENTER NEG DEC VALUE";:INPUT D:D=D+65536:C=D
00760 GOSUB 220:GOSUB 420:GOSUB 540:RETURN
00790 :
00800 :ERA"BASE-CON"
00850 SAVE"BASE-CON"
00900 CLS:DIR:STATUS
```

FOR THOSE THAT WOULD LIKE TO MOVE THE PRINTOUT TO THE RIGHT A BIT IT'S EASY, JUST ADD TAB() TO THE LPRINT STATEMENTS IN LINES 320-380. THE EXAMPLE LINE 320 BELOW SHOWS A LEFT MARGIN OF 10. BELOW IS WHAT YOU CAN EXPECT FROM THE PROGRAM WITH PRINTOUT AND SCREEN EXAMPLES.

```
320 LPRINT TAB(10)"DECIMAL PLUS REST OF LINE/S
```

```
DECIMAL VALUE = 49152 ( -16384 )
 HEX    VALUE = C000
 BINARY VALUE = 1100000000000000
 LSB    VALUE = 0
 MSB    VALUE = 192
..................................
```

```
THIS UTILITY WILL DISPLAY THE
EQUIVALENT VALUES OF POS & NEG
DECIMAL, BINARY, HEX AND LSB &
MSB VALUES TO SCREEN & PRINTER

        D)ECIMAL  VALUE
        N)EG.DEC  VALUE
        B)INARY   VALUE
        H)EX      VALUE
        L)SB+MSB  VALUE
        P)RINT    VALUE
       ================
       SELECT  FUNCTION
```

```
DECIMAL = 49152       ( -16384 )
HEX     = C000
BINARY  = 1100000000000000
L.S.B   = 0       M.S.B. = 192

        D)ECIMAL  VALUE
        N)EG.DEC  VALUE
        B)INARY   VALUE
        H)EX      VALUE
        L)SB+MSB  VALUE
        P)RINT    VALUE
       ================
       SELECT  FUNCTION
```

MAGNUM QUEST ADVENTURE:

Now, who hasn't heard of the famous Thomas Magnum PI show? Well, this is an adventure of Magnum PI and his greatest case yet.

Robin Masters has been kidnapped. (For those who haven't been following the series (why not??) Mr Robin Masters is a rich millionaire-type dude which Thomas Magnum works for.

Thomas even gets to live in Mr Master's home, drive his Ferrari and use the services of Mr Master's butler. Now is that the ULTIMATE job or what?). Anyway, back to the game.

Gangsters knock Thomas on the head and lock him in a hut. He can't open the door to the hut 'cos it's been bolted. But if he uses his genius private-investigator brain, he just might find his way out. This is your first problem.

The extensive manual will help you through the first part of the game (try to figure it out before reading the manual's clues).

As of yet, I haven't completed it but with some time I'm sure I will have myself a Ferarri and have rescued my boss.

NOTE: Magnum Quest consists of 30 HI-RES screens which are loaded from disk as you progress or die while adventuring. That is a lot of scenarios. It is a disk based game only, Ed.

KNIGHTS QUEST ADVENTURE:

If you are into adventures then this one should be for you. (Make sure you have enough memory, though, as it is a biggy!).

This program (I believe) has been converted over from the Commodore 64 computer from an adventure called King's Quest.

When I tested it for the review this is what happened. I became the one and only Sir Graham (Sir Graham?? - I only write the reviews, not the games!!) the King's faithful Knight (he don't know me very well - does he?).

I MUST find and return the three magical treasures to the King's palace to restore peace and tranquility to the land. (Why I don't just nick the magical treasures and become King myself I'll never know! - these adventures don't allow for the high-level of greed I posess - only kidding)!

Okay, here are the magical treasures ...

A magical treasure chest.
A magic shield.
The magic mirror.

It seemed to be a well thought-out adventure, but I ran out of memory (I only have about 32k! - I got an OUT OF SPACE ERROR). Get this adventure and give it a go!

SMALL ASSEMBLER ROUTINES:

AS OF NEXT ISSUE WE'LL START PUBLISHING SMALL ASSEMBLER ROUTINES. IF YOU HAVE ANY THEN PLEASE SHARE WITH OTHER USERS. HAVING BEEN BIT BY THE ASSEMBLY BUG RECENTLY I FOUND SMALL ROUTINES A BIG HELP.

I'LD LIKE TO START A CENTRAL SOURCE CODE LIBRARY FOR BOTH SMALL AND BIG FILES. THEY CAN BE FOR TAPE, DISK OR GENERAL USE. IF YOU CAN HELP OUT THEN PLEASE CONTACT THE EDITOR.

I STAYED AWAY FROM ASSEMBLY FIRST BECAUSE OF LACK OF TIME AND SECOND BECAUSE I THOUGHT IT WAS TOO DIFFICULT TO LEARN. IT WILL TAKE SOME TIME BEFORE I LEARN THE BASICS OF IT. MY THANKS TO JASON OAKLEY FOR GIVING SOME POINTERS WHICH GOT ME GOING. I WAS SURPRISED HOW MUCH I PICKED UP OVER THE YEARS PUBLISHING SOURCE CODE LISTINGS.

ETI630 DEC 76, 2 DIGIT HEX DISPLAY

I'VE PICKED UP A BUILT PROJECT FOR THIS BUT HAVE NO CONNECTING DETAILS. IF SOMEONE CAN HELP WITH CIRCUIT AND PROJECT DETAILS PLEASE CONTACT THE EDITOR.

RAMDISK UPDATE:

AT LONG LAST I HAVE FINALISED DETAILS OF THE RAMDISK AND WITHIN THE NEXT WEEK OR TWO I SHOULD HAVE A PROTOTYPE UP AND RUNNING. THE 64K PLUS MEMORY EXPANSION AND THE RAMDISK WILL OCCUPY THE FOLLOWING I/O PORTS AND ADDRESSES:

```
MAIN MEMORY - C000H-FFFFH - I/O 112-127 (3-32 X 16K BANKS)
RAM DOS     - 6000H-67FFH - I/O 192-207 (4-16 X  2K BANKS)
RAM DISK    - 4000H-5FFFH - I/O 208-223 (4-32 X  8K BANKS)
```

RAMDISK WILL BE SPLIT UP INTO 3 SECTIONS:

1) RAM DOS (RAM DISK OPERATING SYSTEM)
2) DOS (DISK OPERATING SYSTEM)
3) RAM DRIVES 3-6

AS YOU CAN SEE IT'S POSSIBLE TO INCREASE THE VZ MEMORY CAPACITY BY QUITE AN AMOUNT. LATER THIS YEAR THERE SHOULD BE AVAILABLE A 512K X 8 BIT STATIC RAM CHIP WHICH WOULD BE IDEAL FOR FOR THE VZ RAMDISK. I'M PUTTING FORWARD THE FOLLOWING STANDARD:

RAM DRIVES: THEY SHOULD LOGICALLY FOLLOW DRIVE 1 & 2 AND BE REFERED TO AS DRIVES 3-6 DEPENDING UPON MEMORY CAPACITY. EACH RAM DRIVE SHOULD HAVE 80K AND BE INITIALISED AND FORMATTED WITH TRACKS & SECTORS LIKE NORMAL DRIVES.

RDOS: IT WILL BE RDOS'S JOB TO DO THE NORMAL DOS FUNCTIONS BUT WITH AN INCREASED WORKLOAD AS IT WILL HAVE MORE DRIVES TO LOOK AFTER AND DO ALL THE BANK SWITCHING, ETC.

THE REASON WHY WE CAN USE RAM DRIVE/S AT 4000H-5FFFH THE SAME MEMORY AREA AS THE DOS IS SIMPLICITY ITSELF. WHEN THE DOS LOADS A FILE FROM DISK IT PUTS IT IN USER MEMORY AND WHEN IT WRITES TO THE DISK IT TRASFERS A SECTION OF MEMORY TO DISK. ONCE A FILE IS SAVED OR LOADED THE DOS IS NO LONGER REQUIRED AND CAN BE SWITCHED OUT WHICH MEANS THE FILE CAN BE SAVED TO OR LOADED FROM THE RAM DRIVE.

IF YOU HAVE ANY IDEAS ON THE SUBJECT PLEASE LET ME KNOW. PROJECT SHOULD APPEAR IN ISSUE # 39.

E & F WP PATCH 3.3: PATCH 3.3 WRITTEN BY DAVE MITCHELL WILL CONVERT YOUR E & F TAPE WORD PROCESSOR FOR FULL DISK USE WHILE RETAINING ALL ORIGINAL FUNCTIONS. IT ALSO HAS SHIFT LOCK AND PRINTER CONTROL CODES WHICH CAN BE IMBEDDED IN TEXT AND SAVED TO TAPE OR DISK.

BSTWP.F: THIS UTILITY PROVIDED WITH PATCH 3.3 WILL CONVERT BASIC PROGRAMS AND ED/ASS. SOURCE CODE FILES INTO WORD PROCESSOR FILES.

PRICE: AUS/NZ AU$20.00 - UPDATE - AUS-$10.00 - NZ-AU$11.00.

EXTENDED DOS V1.3: THESE COMMANDS ARE AT YOUR DISPOSAL: MERGE, DIRA, DIRA, DIRB, LDIRB, OLD, OLD., DEC, HEX, MENU, CODE, LTAB, MOVE AND UPDATE, STATUSA AND LSTATUSA. STATUSA AND LSTATUSA ALSO WORKS WITH VERSION 1.0 DOS

PRICE: AU$15.00 - POSTAGE INCLUDED

MENU/FILE COPIER: THIS UTILITY WILL READ YOUR DISK DIRECTORY AND PRESENT YOU WITH SEVERAL OPTIONS. USING THE CURSOR YOU CAN RUN/BRUN ANY PROGRAM OR SELECT FILE COPY, REN, ERASE, DRIVE 1 OR 2, ETC. BESIDES COPYING TEXT AND BINARY FILES ALL OTHER FILES CAN BE COPIED AS WELL EXEPT FOR DATA FILES.

PRICE: AU$15.00 - POSTAGE INCLUDED

FOR PURCHASE OR INFORMATION CONTACT:

DAVE MITCHELL 24 ELPHINSTONE STREET
NORTH ROCKHAMPTON QUEENSLAND 4701
AUSTRALIA - PHONE: (079) 27 8519

*** PETER HICKMAN SOFTWARE ***

VZ DISASSEMBLER: WHAT, ANOTHER DISASSEMBLER? BUT, YOU HAVE ALREADY GOT ONE? THIS ONE IS DIFFERENT! THIS PROGRAM IS ENTIRELY WRITTEN IN MACHINE CODE. IT ACTUALLY RUNS ABOUT 40 TIMES FASTER THAN D.S.E.'S DISASSEMBLER (OR ANY ONE ELSE'S). IT WILL DISASSEMBLE ANY PROGRAM THAT YOU CAN BLOAD INTO MEMORY. IT WORKS WITH ANY VZ CONFIGURATION. IT DISASSEMBLES EVEN THE 88 EXTRA Z80 OPCODES THAT ZILOG DOESN'T ADMIT TO.

PRICE: AU$25.00 - PRICE INCLUDES HARDCOPY MANUAL.
TAPE AND DISK VERIONS AVAILABLE.

VZ MODEM SOFWARE: DID YOU WANT TO TALK TO OTHER COMPUTERS VIA A MODEM? DID YOU BUY THE DSE TERMINAL EPROM, ONLY TO DISCOVER THAT IT ONLY WORKS WITH TAPE. IT ONLY ALLOWS YOU TO PRINT FILES, NOT SAVE THEM OR SEND THEM!

YOUR PROBLEMS ARE SOLVED! THE HICKMAN BROTHERS, PETER AND ANDREW, HAVE A BRAND NEW PROJECT WHICH WILL ALLOW YOU TO SEND, RECEIVE & SAVE FILES VIA A MODEM. IT WORKS WITH DISK!

SALE PRICE: $25.00 - INCLUDED ARE INSTRUCTIONS FOR THE HARDWARE MODIFICATIONS. A SMALL MODIFICATION IS NEEDED TO YOUR DISK CONTROLLER. YOUR USER GROUP MAY HELP YOU MODIFY YOUR COMPUTER TO USE THIS EXCITING NEW SOFTWARE!

THE MANUAL IS SUPPLIED ON DISK FOR PRINTING OUT WITH YOUR DISK VERSION OF E & F W/PROCESSOR. IF YOU DO NOT OWN AN E & F W/PROCESSOR THEN PLEASE ENCLOSE ANOTHER $5.00 (TOTAL $30.00) FOR PHOTOCOPYING AND POSTAGE OF THE MANUAL.

FOR PURCHASE OR INFORMATION CONTACT:
PETER HICKMAN PO BOX 8 WERRINGTON 2747

* * CONTRIBUTIONS TO THE JOURNAL * *

IF YOU ARE THINKING OF CONTRIBUTING TO THE JOURNAL THE PREFERED FORMAT IS BASIC LISTINGS, WORD PROCESSOR OR SOURCE CODE FILES ON TAPE OR DISK. FILES FROM THE FOLLOWING WORD PROCESSORS CAN BE ACCEPTED :-

E & F TAPE OR DISK PATCH 3.1-3.3, WORDPRO CARTRIDGE, WORDPRO PATCH, MOST SOURCE CODE FILES AND ALL QUICKWRITE WORD PROCESSOR FILES.

* * CLUB MEETINGS - ALL WELCOME * *

FIRST FRIDAY OF MONTH

* * FUTURE MEETINGS - NEW VENUE * *

AS MENTIONED BEFORE WE NO LONGER MEET AT JNC, BUT AT VARIOUS MEMBERS HOMES. MEETINGS WILL BE ONCE A MONTH AS BEFORE WITH THE DATES BEING FIRST FRIDAY OF THE MONTH.

BECAUSE OF SOME LOCAL MEMBERS HAVING TO WORK SHIFTWORK MEETING DATES WILL BE ADJUSTED TO ACCOMODATE THEM. WHETHER YOU ARE A LOCAL MEMBER, INTRA OR INTERSTATE VISITOR PLEASE CHECK WITH JOE LEON FIRST BEFORE COMING OUT.

JOE LEON 33 TIGHES TCE TIGHES HILL 2297 (049) 692 399

* CLUB COMMITTEE & SUBSCRIPTIONS *

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